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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,947	12/16/2003	Richard C. Chu	POU920030165US1	5523

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EXAMINER

FITZGERALD, JOHN P

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 04/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/736,947

Applicant(s)

CHU ET AL.

Examiner

John P. Fitzgerald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's arguments regarding the previously required election of species is acknowledged and found persuasive. Applicant's arguments regarding the previously required election of species is acknowledged and found persuasive. Previous election/restriction requirement is hereby withdrawn by the Examiner, since the search required for all species of the instant invention are overlapping and all encompassing.

Drawing Objections

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

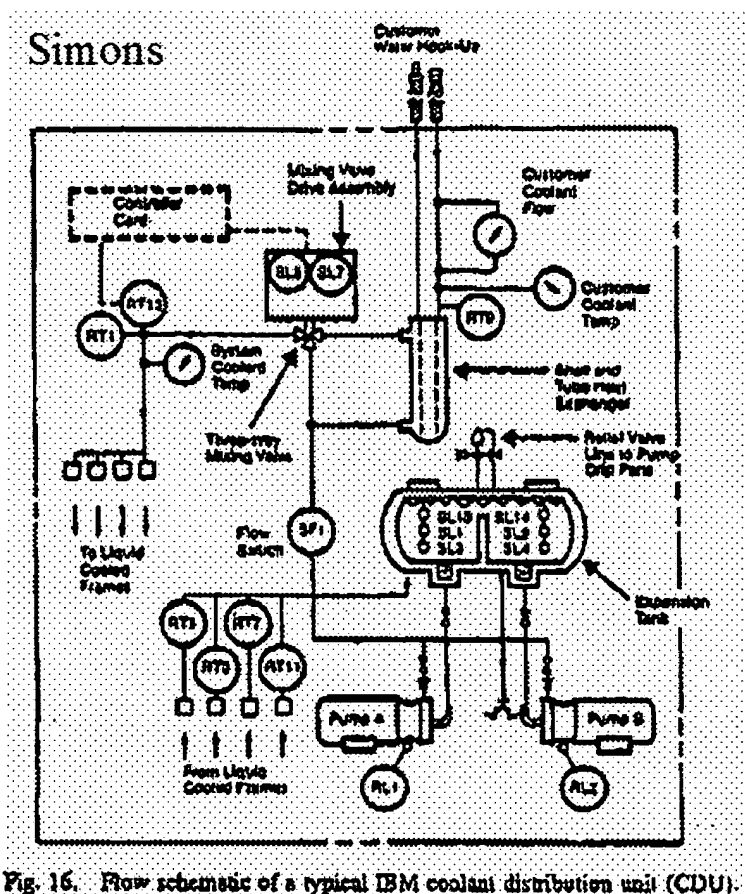
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

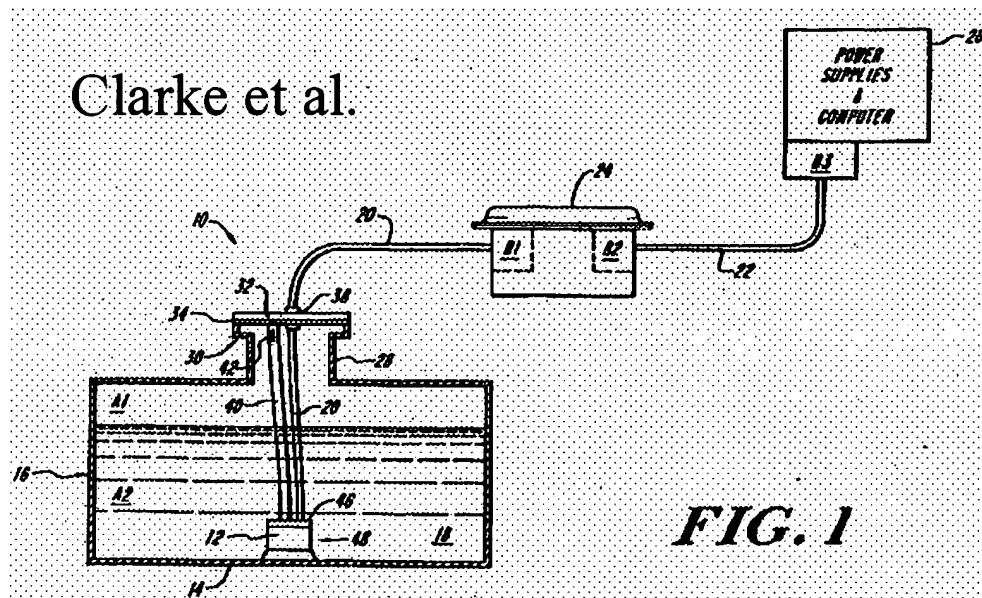
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4. Claims 1, 2, 7-10, 15-18 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's disclosed Prior Art document "The Evolution of IBM High Performance Cooling Technology" by Simons (hereinafter Simons) and US 5,245,869 to Clarke et al. (hereinafter Clarke). Simons discloses various apparatus/system and methods of monitoring coolant with a cooling systems, including water cooled systems (Section IV) (Fig. 16) which circulate and control the temperature of cooling water with a cooling distribution unit (CDU) including the elements of heat exchangers, temperature controllers, pumps, expansion tanks and water supply/return manifolds and the importance of all these elements to function properly and provide uninterrupted operation ensuring adequate cooling levels. Simons fails to disclose monitoring the coolant employing at least one pressure transducer to obtain multiple pressure measurements related to an amount of coolant within the expansion tank, determining a rate of volume change of coolant with the expansion tank employing the multiple pressure measurements (as recited in claims 1, 9 and 17); the measurements being successive pressure measurements at known time intervals and related to the amount of coolant in the expansion tank, thus determining the rate of volume change of the coolant with the expansion tank (as recited in claims 2, 10 and 18); an wherein the pressure transducers are differential pressure transducers (as recited in claims 7, 8, 15, 16 and 20). Clarke teaches a method of monitoring the amount (i.e. level) of liquid within a tank (Figs. 1-5) employing a differential pressure transducer (12) monitoring the amount of fluid above the transducer which is located at the bottom of the tank, making pressure measurements to determine an amount in the tank and a "loss rate" for leak detection (i.e. measurements over time periods, iterations) (Clarke: col. 5, lines 5-10 and col. 7, lines 30-33). It would have been obvious to one having ordinary skill in the art at the time

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the invention was made to employ pressure transducers to monitor the amount of coolant in the tank and all the recited method steps, as taught by Clarke, modifying the method of monitoring coolant within a cooling system disclosed by Simons, thus providing a high resolution and highly accurate sensor and system for monitoring the amount of coolant in the tank for safe, uninterrupted operation of the cooling system (Clarke: col. 1, lines 37-40). Lastly, specifically regarding claims 17 and 20, the provision of providing a program or computer readable medium employing the method /program/instruction steps disclosed by Simons and Clarke is well within the level of one of ordinary skill in the art, and fails to meet any novelty requirement.



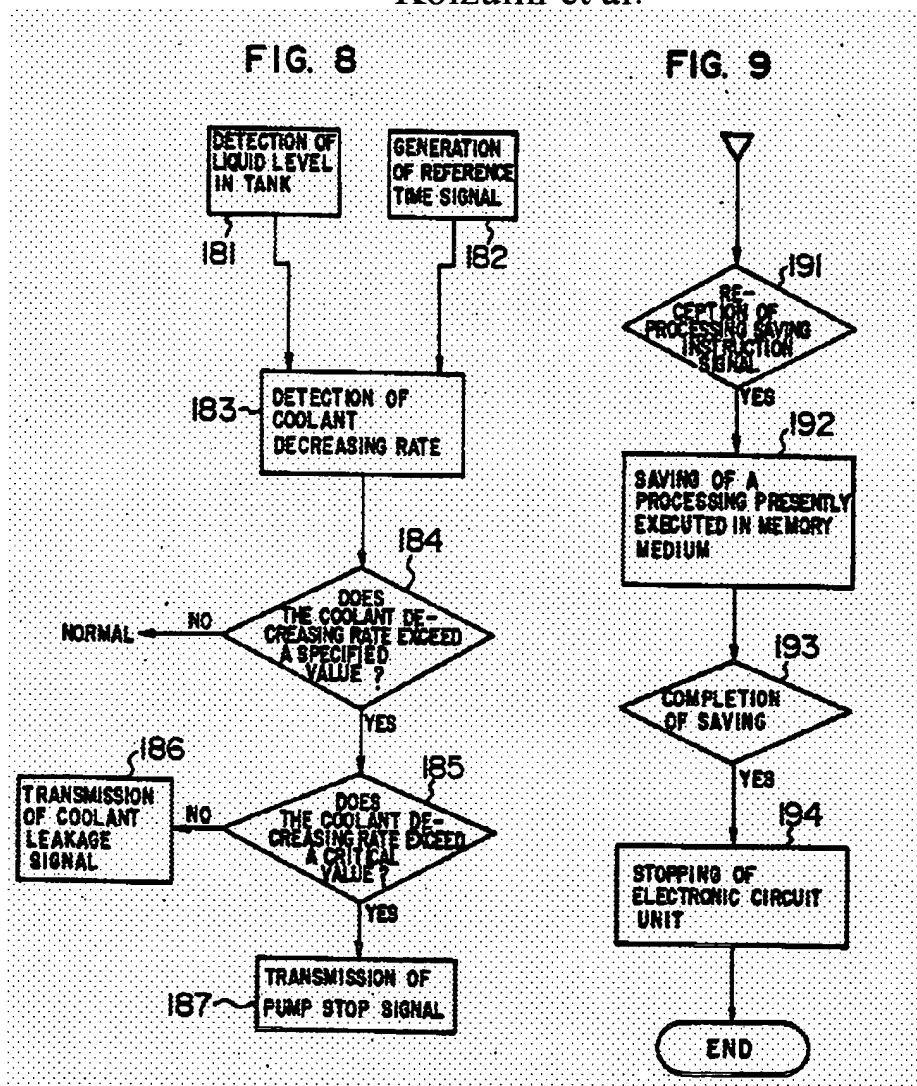


5. Claims 3-6, 11-14 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Simons and Clarke as applied to claims 1, 9 and 17 above, and further in view of US 5,323,847 to Koizumi et al. (hereinafter Koizumi). Simons and Clarke disclose an apparatus/system and method of monitoring coolant within a cooling system having all of the elements and method steps recited previously. Simons and Clarke do not expressly disclose the employment of determining an immediacy of action to be taken to service the cooling system based on the rate of volume change within the expansion tank (as recited in claims 3, 11 and 19); and the employment of specific leak rate set points/thresholds that are exceeded or fall below particular levels of coolant within the coolant tank (as recited in claims 4-6 and 12-14). Koizumi teaches the monitoring of coolant levels for the cooling of an electronic apparatus (Figs. 1-14) wherein the amount (i.e. liquid/water/coolant level) is monitored at particular set points and thus actions (i.e. alarms/indicators) are actuated to inform an operator to take necessary action such as stopping the operation of the electronic unit or inspecting the coolant (see Fig. 8 below)

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(Koizumi: cols. 8-11). It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ limits/set-points to indicate immediacy of action to an operator and other obvious variants as recited in the instant claims, as taught by Koizumi, thus modifying the monitoring of coolant with a cooling system disclosed by Simons and Clarke, thus providing protection means alerting an operator to shut down the electronic unit associated with the cooling system.

Koizumi et al.



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Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is invited to review prior art cited on PTO form 892 for relevant teachings on the instant invention, including level/amount monitoring between limits/setpoints and the employment of differential pressure transducers for monitoring liquid levels/amounts.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Fitzgerald whose telephone number is (571) 272-2843. The examiner can normally be reached on Monday-Friday from 7:00 AM to 3:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams, can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JF

03/23/2005



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